



CODEN [USA]: IAJPBB

ISSN : 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

<http://doi.org/10.5281/zenodo.4264512>Available online at: <http://www.iajps.com>

Research Article

PSYCHOLOGICAL CAUSES ASSOCIATED WITH TEMPOROMANDIBULAR DYSFUNCTION

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Article Received: September 2020 Accepted: October 2020 Published: November 2020

Abstract

Background: Temporomandibular dysfunction (TMD) represents the clinical conditions of the temporomandibular joint, the masticatory muscles, and the structures close to the joint with chronic pain, malfunction of the jaw and joint sounds. Individuals with TMD mainly complain of pain as well as fatigue, headache and restricted mandibular opening. The psychological factors were dispensable and explainable causes of TMD. **Methodology:** This is a cross-sectional study that assessed the prevalence of TMD by a pre-designed self-administrated questionnaire composed of 10 questions. This study aims to determine the psychological causes associated with TMD. The objectives also include identifying the most affected age group by the TMD, the most affected sexes and the most common symptoms, the duration or/and presence of TMD-related pain, suffering from bruxism, developing abnormalities of occlusion and the management strategies. **Results:** The study includes 166 patients, 75.3% of them are females. The prevalence of TMD is (44%), and the females were (60.3%). Most of TMD patients had stress, anxiety and depression (68.5%), and it has a significant association with TMD ($P=0.039$). Bruxism was present in 37% of the patients. **Conclusion:** TMD represents a critical health problem with negative effects on the patients as it affects their quality of life. This made the psychological factors of TMD a major concern. This study concluded a relatively high prevalence of TMD among our population. It also reported a ranking prevalence among females. It is worth mentioning that most of the patients suffered from stress anxiety and depression. Even though, the obvious comprehensive causes of TMD are not clear and not discussed well in most of the literature which implies defects in the management strategies as a consequence.

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Please cite this article in press Hoda Jehad Abousada *et al*, *Psychological Causes Associated With Temporomandibular Dysfunction.*, *Indo Am. J. P. Sci.*, 2020; 07(11).

INTRODUCTION:

The temporomandibular joint (TMJ) is one of the most compound joints, and it is accountable for movements of the mouth, including opening, closing, protrusion, retraction, and lateral deviation of the mandible on the temporal bone. It is a principal structure as its function is directly associated with human communication, emotional expression, and eating, which constitutes a group of main factors that has an impact on the person's quality of life [1].

Any disproportion caused in the TMJ, or to its near structures, can produce a disruption in this joint called TMD the clinical conditions of the temporomandibular joint, the masticatory muscles, and the structures close to the joint with chronic pain, malfunction of the jaw and joint sounds. Individuals with TMD mainly complain of pain as well as fatigue, tension headache and restricted mandibular opening This term is utilized to characterize the clinical conditions of the temporomandibular joint, the masticatory muscles, and the structures close to the joint with chronic pain, malfunction of the jaw and joint sounds. Individuals with TMD mainly complain of pain as well as fatigue, tension headache and restricted mandibular opening [2]. The common symptoms also include sensitivity alterations in the muscles in charge of chewing, restriction and incoordination of movements, mispositioning of the jaw in relation to the maxilla and the noises during jaw movements [3].

The determining of an obvious general cause for TMD is still required. TMD is a disorder with compound causes that result from different contributing factors, and the psychological factors are one of them [4]. A number of studies have demonstrated that psychological factors play a vital role in maintaining and causing TMD in many patients [5,6].

The psychological perspective of TMD patients is usually interesting, as a captivating question arise considering the cause of the disorders, patient management, prognostications of the outcomes, the relationship between TMD and depression, assessing the pain and disability and the function of cognitive factors in the course of TMD [7]. Research findings showed that patients with TMD internal disorder or osteoarthritis of the TMJ complained of relatively lower levels of pain than those with psychological disorders [8].

As the psychological factors have been identified as indispensable variables in maintaining the chronic orofacial pain [9]. Studies have reported that individuals with TMD essayed an increase in stress, anxiety, somatization and depression related to healthy persons [10], and a coherent relationship has been constructed among anxiety, somatic acting of displeasure and TMD-related pain [11]. These correlations are particularly pressing on patients with significant psychiatric disorders as they express more pain relate to TMD and report more depressive symptoms, anxiety and physical symptoms than individuals without mental disorders [12].

Epidemiological literature proposes that the prevalence of TMD-associated pain is nearly 12%; these reviews included TMD in specific subtypes, with identifying possible etiologies for each [13,14]. Nevertheless, the estimated epidemiological rates of TMD have been found to vary significantly counting on the examined population, and the question used to evaluate the chronicity and presence of the pain [15]. Goulet et al. [16] conducted a telephone survey of approximately 900 French-speaking Canadian residents in Quebec to evaluate the prevalence of self-reported jaw pain in a randomized population. About 30% of the population have reported some degree of jaw pain, while frequent episodes of pain were reported by 7% of the sample, and they described their pain as moderate to severe. Altogether, the study suggested that the prevalence in the general population is about 5%.

As long as the health problem of TMD or TMJ disorder is closely associated with the psychological state or the emotional stress, it constitutes an important issue to be researched, explored, and investigated from several aspects so that the psychological state such as depression and anxiety. TMD should have proper attention as it affects the quality of life to its patients while talking and eating by limiting the movement of the jaw, or even during sleep by bruxism teeth, which results in difficulty in the jaw movement. This study mainly aims to identify the psychological factors most closely related to this disorder.

METHODS AND PARTICIPANTS:

This is a cross-sectional study conducted among a total sample of 166 patients of the general population of out- and inpatients attending (?), in the Kingdom of Saudia Arabia. The presence of TMD was assessed by a pre-designed self-administrated questionnaire composed of 10 questions, divided into two parts, regarding the socio-demographic information of the 166 patients (age groups, gender and the presence of

TMD). Then, the questionnaire investigated the characteristics of the patients with TMD (n=73) which included the laterality, duration of TMD-related pain, developing of orofacial pain after dental pain, suffering of bruxism, suffering of abnormalities of occlusion, the presence of emotional stress, anxiety or depression and the management strategies (pain medication, physical therapy, cognitive behavioral therapy or no medication or therapy). The inclusion criteria only patients with TMD. This study aims to determine the psychological causes associated with TMD. The objectives also include identifying the most affected age group by the TMD, the most affected sexes and the most common

symptoms, the duration or/and presence of TMD-related pain, suffering from bruxism, developing abnormalities of occlusion, and the management strategies.

RESULTS:

As shown in table (1), the sample represented (55%) of the target population with participation of 166 patients, 125 (75.3%) were females, and the majority of or sample was from the age group from (18-25 years) with 65 (39.2%) of the patients. The prevalence of TMD among the population was 73 (44%) of the patients.

Table (1): Socio-demographic data of the participants, KSA, 2020 (N=166).

Parameter	Frequency	Percent
Age		
• 18-25 years	65	39.2%
• 26-31 years	30	18.1%
• 32-36 years	19	11.4%
• 37-41 years	16	9.6%
• 42-46 years	11	6.6%
• Above 46 years	25	15.1%
Gender		
• Male	41	24.7%
• Female	125	75.3%
Suffering from TMD		
• Yes	73	44.0%
• No	93	56.0%

Table (2) indicates the characteristics of the patients with TMD (n=73). Of the 73 patients, 29 (39.7%) of them have bilateral TMD and the rest were unilaterally affected. Most of the patients 42 (57.5%) suffered from TMD-related pain for more than 6 weeks. Whereas, over than half of the patients 42 (57.5%) did not develop orofacial pain following dental pain. Regarding the psychological factors, 50 (68.5%) have experienced emotional stress, anxiety and depression, and only 27 (37%) suffered from bruxism. 53 (72.6%) of the patients did not suffer from any abnormalities of occlusion. In the line with the management, more than half of the patients 41 (56.2%) did not need medications or therapy, 20 (27.4%) took pain medication, 7 (9.6%) underwent cognitive behavioral therapy, while only 5 (6.8%) needed physical therapy.

Table (2): Characteristics of TMD among TMD patients (N=73)

Parameter	Frequency	Percent
Laterality		
• Bilateral	29	39.7%
• Unilateral	44	60.3%
Duration of pain		
• Less than 3 weeks	22	30.1%
• 3-6 weeks	9	12.3%
• More than 6 weeks	42	57.5%
Developing orofacial pain after dental pain		
• Yes	31	42.5%
• No	42	57.5%
Emotional stress, anxiety or depression		
• Yes	50	68.5%
• No	23	31.5%
Suffering from bruxism		
• Yes	27	37.0%
• No	46	63.0%
Suffering from abnormalities of occlusion		
• Yes	20	27.4%
• No	53	72.6%
Management		
• Pain medication	20	27.4%
• Physical therapy	5	6.8%
• Cognitive behavioral therapy	7	9.6%
• No medication or therapy	41	56.2%

Table (3) demonstrates the association between age, sex, emotional stress, anxiety or depression, bruxism, and abnormalities of occlusion with TMD. The pooled results reported a significant correlation between the age groups and TMD ($P=0.046$), as the most affected age group is from (18-25 years) with a rate of 39.7% with TMD, and age groups from (37-41 years) and (42-46 years) recorded the least rate with (4.1%) for both groups. There is a strong female representation as 60.3% of the population with TMD are females, which constitutes a significant relationship between sex and distribution of TMD ($P=0.00$). This relationship is also significant regarding the expression of emotional stress anxiety or depression and the abnormalities of occlusion with ($P=0.039$) and ($P=0.001$), respectively. There is no reported association between bruxism and TMD ($P=0.215$)

Table (3): Association between age, sex, emotional stress, anxiety or depression, bruxism, and abnormalities of occlusion with suffering from TMD (N=166).

Parameter		Suffer from TMD		P-value
		Yes	No	
Age groups	• 18-25 years	39.7%	38.7%	0.046
	• 26-31 years	17.8%	18.3%	
	• 32-36 years	11.0%	11.8%	
	• 37-41 years	4.1%	14.0%	
	• 42-46 years	4.1%	8.6%	
	• Above 46 years	23.3%	8.6%	
Sex	• Male	39.7%	12.9%	0.000
	• Female	60.3%	87.1%	
Emotional stress, anxiety or depression	• Yes	68.5%	52.7%	0.039
	• No	31.5%	47.3%	
Suffering from bruxism	• Yes	37.0%	28.0%	0.215
	• No	63.0%	72.0%	
Suffering from abnormalities of occlusion	• Yes	27.4%	7.5%	0.001
	• No	72.6%	92.5%	

P-value is calculated by Chi-Square Test
P-value <0.05 is statistically significant

DISCUSSION:

In this study, the authors assessed the incidence of TMD associated with psychological factors among out- and inpatients and its association with the most affected age groups and the most affected gender. Our pooled results revealed that the prevalence of TMD associated with psychological factors among this general population is (44%), the females estimated a higher prevalence than the males with rate of (75.3%) and the most affected age group was from (18-25 years) with (39.2%). Our study also reported a significant association between the age group and sex affected and TMD with (P=0.046) and (P=0.00), respectively.

Another Saudi study among 105 dental students, the study found an estimated prevalence of TMD with anxiety and depression symptoms of (49.5%), also the female prevalence ranked with (82.7%), and association between TMD and gender was not significant (P=0.737) [17]. Some other Saudi studies were conducted on physicians and also indicated a high prevalence of TMD (37%) [18], and 49.7% in the North of Saudi Arabia [19]. Additionally, study

conducted in Brazil among a student sample of 196 students of age range from (18-25 years) and estimated a prevalence of TMD associated with psychological factors of (50%). The study also supported our results as the females were more affected with TMD (57.42%), but its association with the disease was not significant (P=0.226) [20].

Habib et al. [21], conducted a cross-sectional study and included 400 male university students from five different colleges at King Saud University, Riyadh, Saudi Arabia and reported that there is a significant association between TMD and psychological stress (P=0.079) with percentage of 29.64% of the total population. This was consistent with our result which also report a significant association between TMD and psychological stress, anxiety and depression (P=0.039). Moreover, these outcomes are in agreement with the findings of Pesqueira et al. [22], and showed that TMD had a positive association with state-anxiety (p = 0.008).

This study reported that among the patients with TMD, (42.5%) of them experienced orofacial pain

after dental pain and more than half of them (57.7%) had this pain for over than 3 weeks. Most of the Saudi and non-Saudi studies reported the TMD-related pain as Habib et al. [21] essayed that 15% of their population found it hard to open their mouths, and 34.6% of them said that they got pain while chewing. A Brazilian cross-sectional study carried out an epidemiological study and reported a higher prevalence of TMD in females (50.4%) and TMD pain of 25.6%, followed by TMJ pain and masticatory muscle pain [22].

A study in Mexico evaluated the prevalence and related factors to TMD in 506 adolescents and youth adults and reported the following; TMD prevalence was 46.9% and presence of occlusion found in 41.5% of the population [23].

A retrospective analysed study was conducted in China among young adolescents with TMD and their mean age of 14.54 ± 1.80 years, and older adolescents with mean age of 18.37 ± 0.69 years. The study reported that 45.7% of the population had psychological stress, 15.7% of them had abnormal occlusion and 11.4% suffered from bruxism [24]. Rieder et al. [25] reported a prevalence of bruxism among TMD patients of 16%. Our results recorded that the percentage of TMD patients with bruxism is (37%) and 27.4% with abnormalities in occlusion.

There is a notable shortage of the identifiable etiologies of the complicated biopsychological nature of individuals with TMD which in turn resulted in delaying the treatment which might aggravate the present symptoms. In the same context, our study assessed the management strategies of TMD patients and found that around 56.2% of the participants did not have any medications or therapy.

CONCLUSION:

TMD represents a critical health problem that has a negative effect on its patients' lifestyle regarding the symptoms that affect the means of communication with other persons or facial expressions. This made the psychological factors of TMD a major concern. This study concluded a relatively high prevalence of TMD among our population. It also reported a ranking prevalence among females. It is worth mentioning that most of the patients suffered from stress anxiety and depression. These findings all agree with other Saudi and international studies. Even though the obvious comprehensive causes of TMD are not clear and not discussed well in most of the literature, which implies defects in the management strategies as a consequence.

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